

Erosion and Deposition ▪ *Section Summary*

Waves

Guide for Reading

- What gives waves their energy?
- How do waves erode a coast?
- What features result from deposition by waves?

Ocean waves contain energy—sometimes a great deal of energy. **The energy in waves comes from wind that blows across the water's surface.** The energy that water picks up from the wind causes water particles to move up and down as the waves go by. But the water particles themselves don't move forward.

Waves are a major force of erosion along coasts. **Waves shape the coast through erosion by breaking down rock and transporting sand and other sediment.** One way waves erode the land is by impact. Large waves can hit rocks along the shore with great force. This energy can break apart rocks.

Waves also erode by abrasion. As a wave approaches shallow water, it picks up sediment, including sand and gravel. This sediment is carried forward by the wave. When the wave hits land, the sediment wears away rock like sandpaper wearing away wood.

Waves coming to shore gradually change direction. The change in direction occurs as different parts of a wave begin to drag on the bottom. The energy of these waves is concentrated on the headlands. A **headland** is a part of the shore that sticks out into the ocean. Over time, waves erode the headlands and even out the shoreline.

Waves shape a coast when they deposit sediment, forming coastal features such as beaches, spits, and barrier beaches. Deposition occurs when waves slow down, causing the water to drop its sediment. As waves reach the shore, they drop the sediment they carry, forming a beach. A **beach** is an area of wave-washed sediment along a coast. The sediment on a beach usually moves down the beach after it has been deposited. Waves usually hit the beach at an angle instead of straight on. These angled waves create a current that runs parallel to the coastline. As waves repeatedly hit the beach, some of the beach sediment moves down the beach with the current, in a process called **longshore drift**.

One result of longshore drift is the formation of a spit. A **spit** is a beach that projects like a finger out into the water. Spits occur where a headland or another obstacle interrupts longshore drift.

Incoming waves carrying sand may build up sandbars, long ridges of sand parallel to shore. A barrier beach is similar to a sand bar. Barrier beaches are found in many places along the Atlantic coast of the United States.